

Phoroncidia, Janula and a new genus Brunepisinus (Araneae: Theridiidae) from Brunei

Hajime Yoshida^{1*} & Joseph K H Koh²

¹ Yamagata Prefectural Museum, Kajo-machi 1–8, Yamagata-shi, 990–0826 Japan

E-mail: yoshidahaji@pref.yamagata.jp

² Singapore High Commission, 8, Simpang 74, Jalan Subok, Bandar Seri Begawan, BD 2717, Brunei Darussalam

E-mail: joseph_koh@mfa.gov.sg / josephkhkoh@gmail.com

* Correspondence

Abstract — Eight species of the family Theridiidae are reported from Brunei Darussalam. *Phoroncidia lygeana* (Walckenaer, 1842) is recorded for the first time and redescribed. *Janula* Strand, 1932 is revived from the synonymy of *Episinus* Latreille, 1809. Six new species of *Janula*, *J. bruneiensis*, *J. bizona*, *J. bubalis*, *J. triangularis*, *J. batman* and *J. triocellata*, are described. *Monetoculus* Wunderlich, 2008 is newly synonymised with *Janula*. A new genus, *Brunepisinus*, is erected based on a new species, *B. selirong*.

Key words — *Phoroncidia*, *Janula*, *Brunepisinus*, Theridiidae, new species, new genus, Brunei

The spiders of Brunei Darussalam, a small sultanate (5,765 km²) bordering the Malaysian state of Sarawak on the northern shore of Borneo, have not been well studied. There have only been isolated reports describing or mentioning the presence of Bruneian spiders: they cover the families Anapidae (Snazell 2009), Araneidae (Levi 1983), Clubionidae and Corinnidae (Deeleman-Reinhold 2001), Linyphiidae (Millidge & Russell-Smith 1992) and Oxyopidae (Deeleman-Reinhold 2009). Although general collection reports have suggested that spiders of the family Theridiidae dominate the forest canopy in Brunei (Russell-Smith & Stork 1995; Deeleman-Reinhold 2001), they have not been documented in detail.

In this paper, the authors report eight theridiid spiders from the coastal mangrove and lowland forests of Brunei Darussalam. One of them, *Phoroncidia lygeana* (Walckenaer, 1842), an easily recognized species with three pairs of characteristically long abdominal spines, is recorded for the first time from Brunei. The other seven species are regarded as new to science. They superficially resemble *Episinus* Latreille, 1809 but have differences significant enough by theridiid norm to warrant placement in separate genera. The genus *Janula* Strand, 1932, previously synonymised with *Episinus* Latreille, 1809, is revived to accommodate six of the new species. The authors also erect a new genus *Brunepisinus* to place the remaining new species.

Holotypes, allotypes and some paratypes of the new species described in this paper are deposited in the National Spider Reference Collection at the Brunei Museum (BM), and reminder paratypes are preserved in the Department of Zoology, National Museum of Nature and Science, Ibaraki

(NSMT). Collecting numbers of Joseph K H Koh (JK) are recorded for all specimens.

The following abbreviations are used in the description: ALE, anterior lateral eye; AME, anterior median eye; AME-ALE, distance between AME and ALE; AME-AME, distance between AMEs; MOA, median ocular area; PLE, posterior lateral eye; PME, posterior median eye; PME-PLE, distance between PME and PLE; PME-PME, distance between PMEs; ALE-PLE, distance between ALE and PLE.

Theridiidae Sundevall, 1833

Phoroncidia Westwood, 1835

Phoroncidia Westwood 1835, p. 452, (Type species: *Phoroncidia aculeata* Westwood, 1835) — Wunderlich 2004, p. 1841; Wunderlich 2008, p. 272.

Note. Levi & Levi (1962) revised the genus *Phoroncidia*, and synonymised *Oronota* Simon, 1871, *Ulesanis* L. Koch, 1872 and other genera with this genus. Notwithstanding this, Wunderlich (2008) revived *Ulesanis*. In this paper, the authors use *Phoroncidia* in the strict sense.

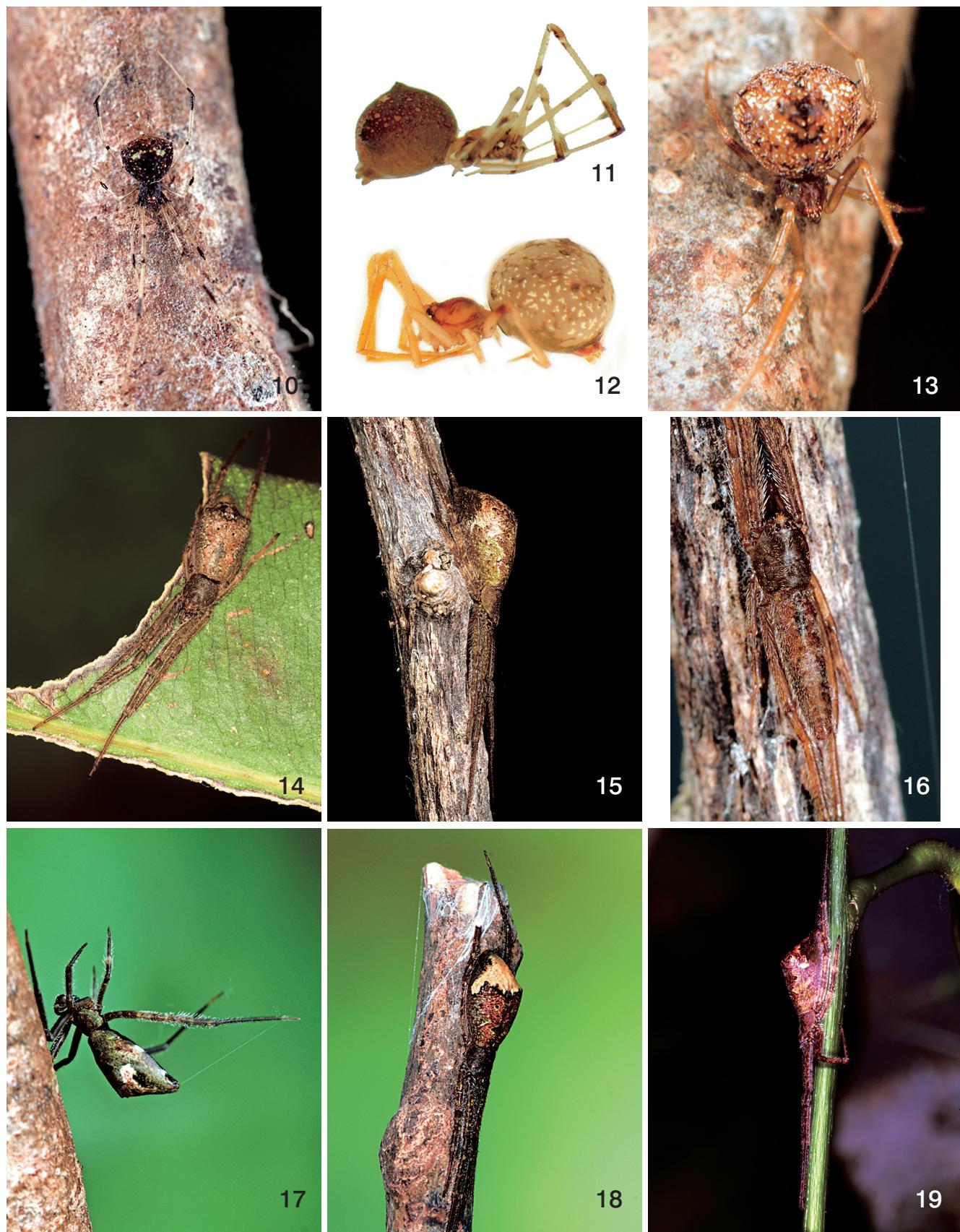
Phoroncidia lygeana (Walckenaer, 1842)
(Figs. 1–3, 20–27)

Plectana lygeana Walckenaer 1842, p. 197.

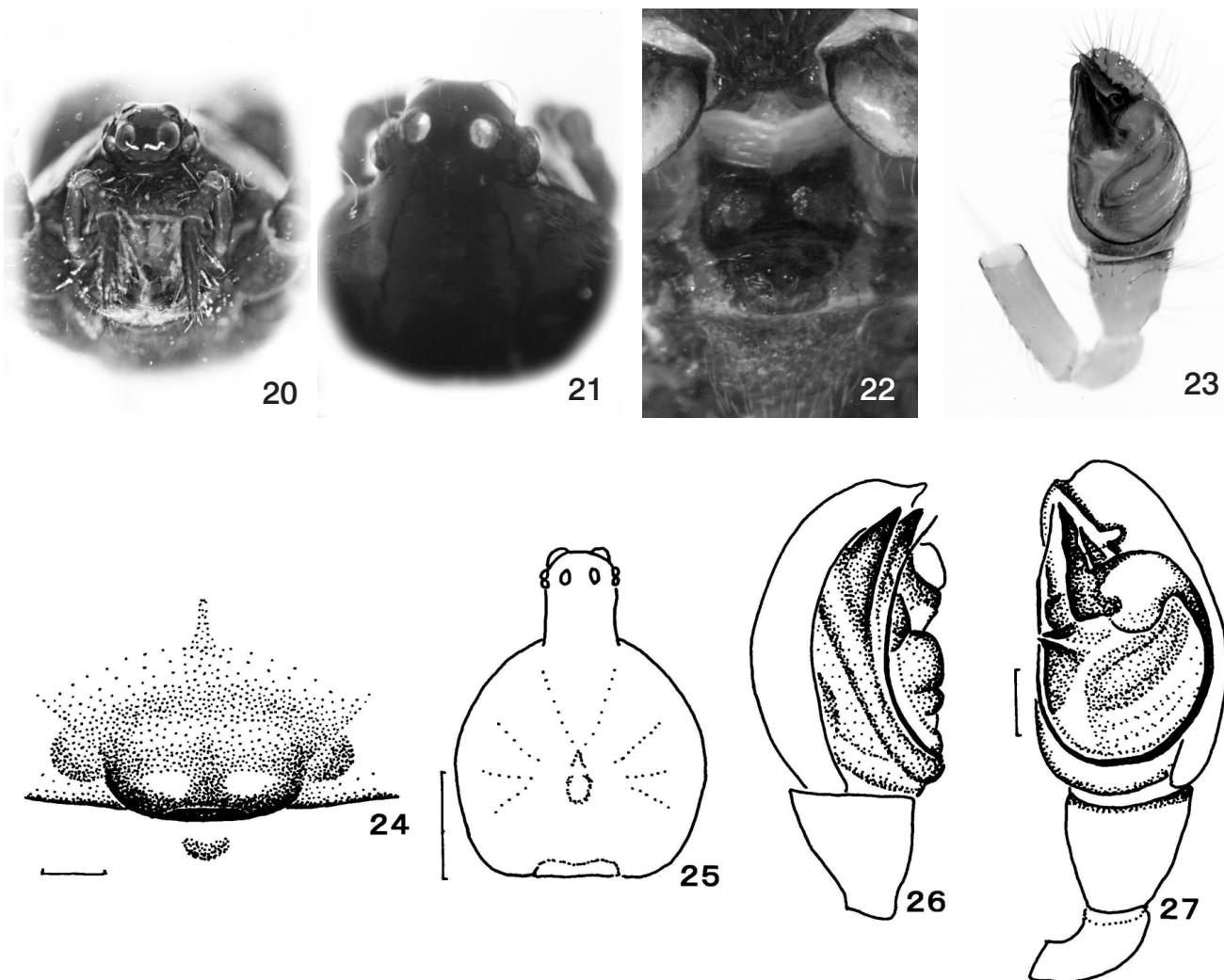
Phoroncidia lygeana: Thorell 1890, p. 243; Simon 1894, p. 553, fig. 566; Workman 1896, p. 58, pl. 58; Archer 1950, p. 39, pl. IV, fig. 5; Bristowe 1976, p. 11, figs. 7–14; Murphy & Murphy 2000, p. 405, fig. 16.



Figs. 1–9. 1–3, *Phoroncidia lygeana* (Walckenaer, 1842), from Tutong (1) and from Ulu Temburong National Park (2–3); 4–5, *Janula bruneiensis* new species, holotype (4) and allotype (5); 6, *J. bizona* new species, holotype; 7, *J. bubalis* new species, holotype; 8–9, *J. triangularis* new species, holotype — 1, 4, 6–9, female, habitus; 2, 5, male, habitus; 3, male, dorsal view. [Photo: Joseph K H Koh]



Figs. 10–19. 10–11, *Janula batman* new species, holotype; 12–13, *J. triocellata* new species, holotype; 14–19, *Brunepisinus selirong* new species, holotype (14), paratype (15), allotype (16), from Temburong (17), from Beluluk (18) and from Sukan (19) — 10, 13–15, 18–19, female, habitus; 11–12, female, lateral view; 16, male, habitus; 17, subadult male, habitus. [Photo: Joseph K H Koh]



Figs. 20–27. *Phoroncidia lygeana* (Walckenaer, 1841), from Tutong (20–22, 24) and from Ulu Temburong National Park (23, 25–27) — 20, female, anterior view; 21, female carapace, dorsal view; 22, 24, epigynum, ventral view; 23, 26–27, male left palpus, ventral (23, 27) and prolateral (26) views; 25, male carapace, dorsal view. Scales: 0.1 mm (24, 26–27) and 0.5 mm (25). [Photo: Joseph K H Koh]

Description. Female. Carapace oval with eye region projecting (Figs. 1, 20–21). AMEs two-thirds their diameter apart. PMEs their diameter apart. AME larger than the others (2: 1). MOA wider than long; anterior width slightly longer than posterior. Leg formula, 4, 1, 2 and 3. First patella and tibia nearly same as carapace length. Abdomen with leathery integument, flat and oblong, with three pairs of strong and long spines, two pointing latero-dorsally and the third pointing latero-ventrally (Fig. 1); lateral margins of the abdomen to the front and back of the anterior spines fringed by thickened and transparent edgings; spinnerets surrounded by a large sclerotized ring. Epigynum as shown in Figs. 22, 24.

Coloration (Figs. 1, 20–21). Basal color blackish brown to black. Carapace almost black. Fourth femora lighter in basal part. Abdomen with punctuated white lateral margins visible under the thickened transparent borders around the anterior spines; short median white stripe present on abdomen posteriorly; large sclerotized disks and spines blackish

brown.

Male. Basal color lighter than that of female. It is almost red in live specimens (Figs. 2–3). Carapace dusky brown. Eye region cylindrical and projecting anteriorly (Figs. 2–3, 25). AMEs seven-tenths their diameter apart. AME largest. Leg formula, 4, 1, 2, 3. First patella and tibia 0.9 time carapace length. Abdomen brown with black spines. Male palpus with embolus thin, long and clockwise (left), and with a hooked paracymbium (Figs. 23, 26–27).

Measurements (in mm, 1♀/ 1♂; excluding spine-like projections in parenthesis). Body length 6.15 (5.17)/ 5.27 (4.15). Carapace length 1.71/ 1.46; width 1.36/1.12. Abdomen length 4.73 (3.71)/ 3.85 (2.73); width 4.78 (2.29)/ 2.54 (1.71); height 4.29 (2.93)/ 2.54 (1.66). Length of legs [total (femur + patella and tibia + metatarsus + tarsus)]: I 5.71/ 4.19 (1.95/ 1.46 + 1.76/ 1.32 + 1.07/ 0.73 + 0.93/ 0.68); II 3.41/ 2.59 (1.02/ 0.83 + 1.22/ 0.98 + 0.54/ 0.49 + 0.63/ 0.34); III 3.42/ 2.49 (1.12/ 0.83 + 1.17/ 0.83 + 0.54/ 0.34 + 0.59/ 0.49); IV 5.91/ 4.79 (2.20/ 1.71 + 2.10/

$1.66 + 0.88/ 0.59 + 0.73/ 0.63$). Diameters: AME 0.15/ 0.12; ALE 0.07/ 0.07; PME 0.07/ 0.09; PLE 0.07/ 0.07. Distances: AME-AME 0.10/ 0.07; AME-ALE 0.02/ 0.02; PME-PME 0.07/ 0.07; PME-PLE 0.10/ 0.07. MOA, anterior width 0.32/ 0.27; posterior width 0.27/ 0.24; length 0.17/ 0.20.

Specimens examined. 1♀ (BM, JK.10.01.24.2101), 1♀ (NSMT-Ar 9176, JK.10.01.24.2102), Tutong, Tasek Merimbun, Site C-2, Camp 2, Sg Melunchur, Brunei, $04^{\circ}34'53''N$ $114^{\circ}41'25''E$, 24-I-2010, Joseph K H Koh leg.; 1♂ (BM, JK.09.04.11.1002), Ulu Temburong National Park, Ashton Trail, $04^{\circ}32'34''N$ $115^{\circ}09'10''E$, 11-IV-2009, Joseph K H Koh leg.

Biology. The spider is sporadically common in Brunei rainforests. It is found suspended among foliage of young tress, without any web.

Distribution. Malaysia (Pahang) and Indonesia (Sumatra, Java). First record for Brunei Darussalam.

Janula Strand, 1932

Janulus Thorell 1881, p. 163 (Type species: *Janulus bicornis* Thorell, 1881), preoccupied by *Janulus* Lowe, 1852.

Janula Strand 1932, p. 139, replaced name for *Janulus* Thorell, 1881.

Monetoculus Wunderlich 2008, p. 340, (Type species: *Monetoculus parvus* Wunderlich, 2008). **New Synonymy**

Description. Small spiders no larger than 2.5–3.7 mm in female and 1.7–2.5 mm in male, Carapace oval with two conical tubercles bearing the AMEs. AMEs dark and prominent, larger than other eyes. PMEs and lateral eyes often surrounded by reddish coloration, making the eyes clearly visible in the field. Leg formula, 1, 4, 2, 3. First patella and tibia 2.2–2.5 times carapace length. Angular hump at fourth patella. Abdomen broadly triangular, usually with paired spines or outgrowths laterally. Epigynum usually with a large depression. Male palpus with long, thin and clockwise (left) embolus, and large conductor.

Note. The generic names, *Moneta* O. Pickard-Cambridge, 1870, *Janulus* Thorell, 1881 (replaced by *Janula* Strand, 1932), *Penictis* Simon, 1894, *Plocamis* Simon, 1894, *Episinopsis* Simon, 1894, *Hyocrea* Simon, 1894, and *Hyptimorpha* Strand in Bösenberg & Strand, 1906 were synonymised with *Episinus* Latreille, 1809 by Levi (1955). Okuma (1994) revived *Moneta*, and synonymised *Hyptimorpha* with the revived genus. Wunderlich (2008) established a new genus *Monetoculus*, but the type species shows characteristics already associated with *Janula* Strand, 1932 (e.g., AMEs largest). The authors therefore regard *Monetoculus* synonymous with *Janula*. Based on the shared characters given in the description above, *Janula* represents a distinct and self-contained group within the *Episinus* complex (*sensu* Levi 1955) and, in our opinion, should therefore be revived.

The now revived genus includes the six new species from

Brunei Darussalam described below. A Malaysian species, *Janula parva* (Wunderlich, 2008) **new combination**, is newly transferred from *Monetoculus*. The genus also includes the 14 species previously described under *Janula*, viz., the type species from Queensland, Australia, *Janula bicornis* (Thorell, 1881); seven Asian species: *J. bifrons* (Thorell, 1895), *J. luteolimbata* (Thorell, 1898), *J. marginata* (Thorell, 1898), *J. modesta* (Thorell, 1898), *J. ocreata* (Simon, 1909), *J. picta* (Simon, 1895) and *J. taprobanica* (Simon, 1895); and six American species: *J. bicorniger* (Simon, 1894), *J. bicruciatata* (Simon, 1895), *J. erythrophthalma* (Simon, 1894), *J. malachina* (Simon, 1895), *J. nebulosa* (Simon, 1895) and *J. salobreensis* (Simon, 1895). Some of the other American species described under the genus *Episinus* (cf. Levi 1955, 1964; Platnick 2010) may also belong to this genus.

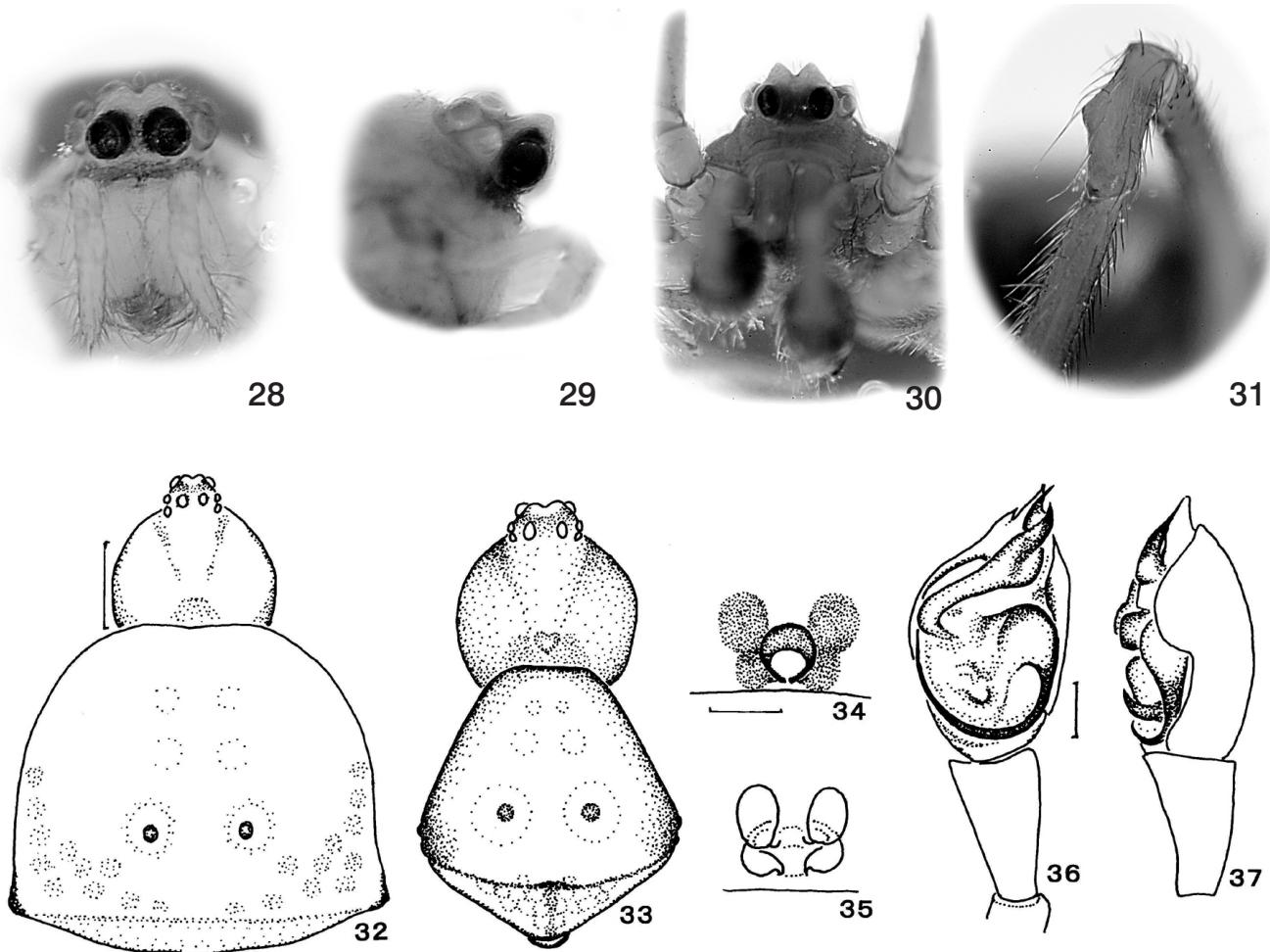
Janula bruneiensis new species (Figs. 4–5, 28–37)

Diagnosis. The present new species is similar to *Janula bicruciatata* (Simon, 1895) and *J. salobreensis* (Simon, 1895), both described from Brazil, in general appearance, and *J. bizona* new species, especially in the shape of abdomen. However, it is distinguished from them and from other Asian species by a pair of large, seemingly sunken brown disks, and by its coloration (abdomen yellow or green when alive, with a pair of black spots at lateral angles, connected by a transverse black line).

Description. Female (holotype). Carapace oval with two conical tubercles bearing the AMEs (Figs. 28–29, 32). AMEs three-fourths and PMEs four-sevenths their diameter apart. Diameters in ratio, AME: ALE: PME: PLE = 8: 6: 7: 6. MOA, anterior width longer than posterior. Leg formula, 1, 4, 2, 3. First patella and tibia 2.5 times carapace length. Abdomen trapezoid, nearly as long as wide somewhat obtuse posteriorly, with a distinct pair of sclerotized disks (Figs. 4, 32). Genital organ as shown in Figs. 34–35: epigynum with a depression; seminal receptacles oval; ducts thick, forming additional seminal receptacles near openings.

Coloration (Figs. 4, 32). Carapace yellowish brown with lateral dusky flecks. Area around lateral eyes and PMEs surrounded by reddish eye marks. Clypeus with a dark brown transverse zone below the AMEs. Chelicerae, maxillae, labium and sternum yellowish brown. Palpus and legs light brown. Abdomen grayish brown with many disk-like dusky flecks (greenish or yellow in live specimens), and with a pair of black spots at both corners posteriorly, joined by a transverse black line; sclerotized disks brown.

Male (allotype). Carapace brown, head region light (Figs. 5, 33). First patella with retrolatero-median projection. Palpus and legs brown. Chelicerae, maxillae, labium and sternum dusky brown. Carapace with two conical tubercles (Fig. 30). Abdomen grayish dusky brown with marginal brown flecks, transverse black line and posterior white pigments (Figs. 5, 33). PMEs four-sevenths their diameter



Figs. 28–37. *Janula bruneiensis* new species, ♀ holotype (28–29, 32, 34–35) and ♂ allotype (30–31, 33, 36–37) — 28, 30, anterior view; 29, lateral view; 31, fourth leg, dorsal view; 32–33, carapace and abdomen, dorsal view; 34, epigynum, ventral view; 35, internal genitalia, dorsal view; 36–37, palpus, ventral (36) and retrolateral (37) views. Scales: 0.5 mm (32–33) and 0.1 mm (34–37). [Photo: Joseph K H Koh]

apart. First patella and tibia 2.3 times carapace length. Angular hump at fourth patella (Fig. 31). Palpal organ as shown in Figs. 36–37: embolus thin, long and clockwise (left) with base; conductor oblong, the tip pointed. Other characteristics as in female.

Measurements (in mm, ♀ holotype/ ♂ allotype). Body length 2.63/ 2.24. Carapace length 0.78/ 0.98; width 0.78/ 0.88. Abdomen length 1.95/ 1.32; width 1.95/ 1.32. Length of legs: I 6.00/ 7.17 (1.76/ 2.05 + 1.95/ 2.29 + 1.61/ 2.10 + 0.68/ 0.73); II 3.36/ 4.05 (1.07/ 1.22 + 1.02/ 1.27 + 0.78/ 1.02 + 0.49/ 0.54); III 2.44/ 2.39 (0.73/ 0.73 + 0.73/ 0.68 + 0.54/ 0.59 + 0.44/ 0.39); IV 4.35/ 4.73 (1.02/ 1.41 + 1.37/ 1.37 + 1.07/ 1.41 + 0.59/ 0.54). Diameters: AME 0.10/ 0.12; ALE 0.07/ 0.09; PME 0.09/ 0.09; PLE 0.07/ 0.09. Distances: AME-AME 0.07/ 0.10; AME-ALE 0.02/ 0.02; PME-PME 0.05/ 0.09; PME-PLE 0.02/ 0.09. MOA, anterior width 0.24/ 0.27; posterior width 0.20/ 0.17; length 0.24/ 0.22.

Variation. Abdomen nearly triangular in female paratype (Fig. 22). Measurements (in mm, 1♀ paratype). Body length 2.59. Carapace length 0.93; width 0.78. Abdomen

length 1.66; width 1.66.

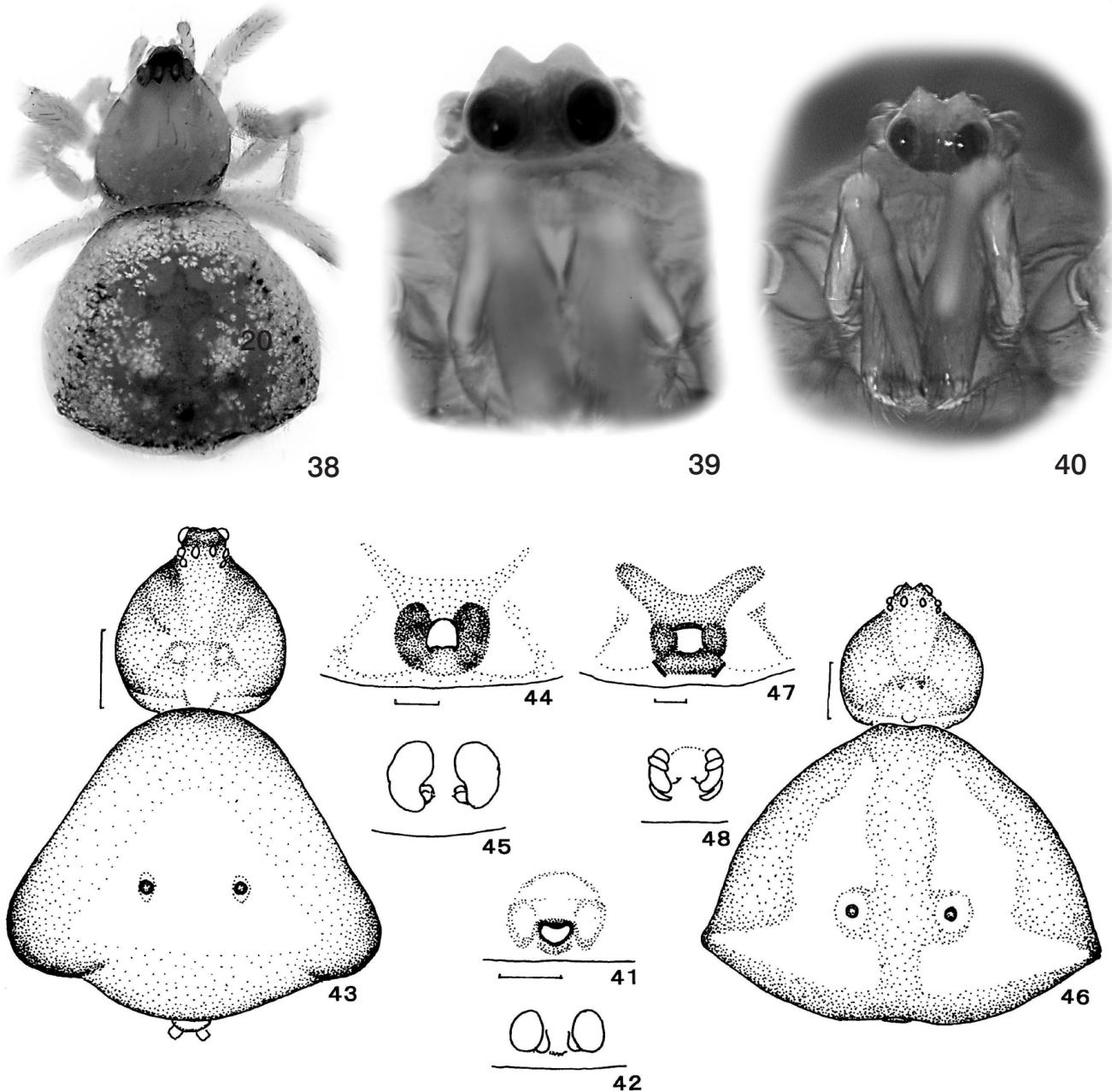
Type series. Holotype: ♀ (BM, JK.08.08.24.0028), Temburong, Kuala Belalong, opp KBFSC, Brunei, 04°32' 48"N 115°09'27"E, 24-VIII-2008, Joseph K H Koh leg. Allotype: ♂ (BM, JK.08.01.29.0042), Belait, Bukit Teraja, 21 m alt, Mixed dipterocarp forest, 04°19'36"N 114°26'01"E, 29-I-2009, Joseph K H Koh leg. Paratype: 1♀ (NSMT-Ar 9177, JK.09.10.02.1005), Temburong, Kuala Belalong, opp KBFSC, 222 m ASL, 1° forest, 04°32'58"N 115°09'26"E, 2-X-2009, Joseph K H Koh leg.

Distribution. Brunei Darussalam.

Etymology. The specific name is derived from the country of the type locality.

Janula bizona new species (Figs. 6, 38, 41–42)

Diagnosis. The present new species is similar to *Janula bicruciatata* (Simon, 1895) and *J. salobrensis* (Simon, 1895), both described from Brazil, and *J. bruneiensis* new species, in general appearance. However, it is distinguished from



Figs. 38–48. *Janula bizona* new species, ♀ holotype (38, 41–42), *J. bubalis* new species, ♀ holotype (39, 43–45) and *J. triangularis* new species, ♀ holotype (40, 46–48) — 38, dorsal view; 39–40, anterior view; 41, 44, 47, epigynum, ventral view; 42, 45, 48, internal genitalia, dorsal view; 43, 46, carapace and abdomen, dorsal view. Scales: 0.5 mm (43, 46) and 0.1 mm (41–42, 44–45, 47–48). [Photo: Joseph K H Koh]

them by having a distinct bi-color zonation of its ovoid abdomen (Fig. 6) and distinct rings on the legs. This species is also distinguished from *J. bruneiensis* by its genital structure, including a much smaller and heart-shaped depression.

Description. Female (holotype). Carapace oval with two conical tubercles bearing the AMEs at their basal halves (Figs. 6, 38). AMEs seven-eighths their diameter apart. PMEs a half their diameter apart. Diameters in ratio, AME: ALE: PME: PLE = 8: 6: 6: 7. MOA, anterior width longer than posterior. Leg formula, 1, 4, 2, 3. First patella and

tibia 1.8 times carapace length. Abdomen near ovoid, wider than long, with a single median and paired lateral sclerotized disks (Figs. 6, 38). Lateral angles of the abdomen with a pair of short but inconspicuous spine-like projections (not obvious in figures). Genital organ as shown in Figs. 41–42: epigynum with a heart-shaped depression; seminal receptacles oval; duct thin.

Coloration (Figs. 6, 38). Carapace yellowish brown with a narrow blackish margin. Chelicerae, labium, palpus and sternum yellowish brown. Maxillae yellowish brown,

marginally dark. Legs yellowish brown with blackish flecks and rings: fourth femora with distal ring; first and second femora with ventral small flecks; patella with flecks; first, second and fourth tibiae with distal ring. Abdomen brown with dorsal white pigments (posterior greenish yellow in alive); lateral and posterior edges slightly black; spinnerets surrounded with brown; venter without flecks.

Male. Unknown.

Measurements (in mm, ♀ holotype). Body length 2.17. Carapace length 0.78; width 0.76. Abdomen length 1.39; width 1.66. Length of legs: I 4.20 (1.15 + 1.44 + 1.05 + 0.56); II 2.63 (0.73 + 0.85 + 0.61 + 0.44); III 1.73 (0.49 + 0.51 + 0.39 + 0.34); IV 2.93 (0.85 + 0.93 + 0.71 + 0.44). Diameters: AME 0.10; ALE 0.07; PME 0.07; PLE 0.09. Distances: AME-AME 0.09; AME-ALE 0.01; PME-PME 0.04; PME-PLE 0.04. MOA, anterior width 0.22; posterior width 0.16; length 0.20.

Type specimen. Holotype: ♀ (BM, JK.07.07.10.0009), Ulu Temburong, Sungai Temburong, river bank vegetation, Brunei, 04°23'19"N 115°09'28"E, 10-VII-2007, Joseph K H Koh leg.

Distribution. Brunei Darussalam.

Etymology. The specific name means “two zones” in Latin and is based on the coloration of the abdomen when alive.

Janula bubalis new species

(Figs. 7, 39, 43–45)

Diagnosis. The present new species resembles *Janula modesta* (Thorell, 1898) described from Myanmar and *J. triangularis* new species, but is distinguished from them by the abdomen with a pair of horn-like outgrowths laterally. The abdomen is reddish brown with a median pale fleck (without distinct fleck in *J. modesta*; with reddish flecks in *J. triangularis*) and from *J. triangularis* by bean-shaped seminal receptacles of female internal genitalia (tumbler-shaped in *J. triangularis*).

Description. Female (holotype). Carapace oval with two conical tubercles bearing the AMEs, and two round cervical grooves (Figs. 7, 39, 43). AMEs and PMEs their diameter apart. AME larger than the others (10: 7). MOA, anterior width longer than posterior (13: 9). Leg formula, 1, 4, 2, 3. First patella and tibia 2.2 times carapace length. Abdomen wider than long, nearly triangular, with posterior swelling (Figs. 7, 39, 43). Genital organ as shown in Figs. 44–45: epigynum with a square depression, sclerotized plates extended antero-laterally; seminal receptacles bean-shape.

Coloration (Figs. 7, 39, 43). Carapace dusky brown. Chelicerae, maxillae, labium, sternum and palpus dusky brown. Legs brown to dusky brown: trochanters and basal part of femora light brown. Abdomen reddish brown with a median pale area, and with anterior and both sides of posterior angular black flecks; venter blackish brown in both sides, grayish brown between epigynum and spinnerets; epigastric area brown.

Male. Unknown.

Measurements (in mm, ♀ holotype). Body length 3.17. Carapace length 1.22; width 1.02. Abdomen length 1.95; width 2.29. Length of legs: I 8.92 (2.68 + 2.73 + 2.68 + 0.83); II 5.12 (1.56 + 1.56 + 1.37 + 0.63); III 3.08 (0.93 + 0.88 + 0.78 + 0.49); IV 6.53 (2.00 + 1.85 + 2.05 + 0.63). Diameters: AME 0.12; ALE 0.09; PME 0.09; PLE 0.09. Distances: AME-AME 0.12; AME-ALE 0.02; PME-PME 0.09; PME-PLE 0.09. MOA, anterior width 0.32; posterior width 0.22; length 0.22.

Type specimen. Holotype: ♀ (BM, JK.09.10.14.1102), Tutong, Tasek Merimbun Heritage Park, Trail to Kem Luat, Base Camp in Zone C-3, Brunei, 04°32'26"N 114°39'08"E, 14-X-2009, Joseph K H Koh leg.

Distribution. Brunei Darussalam.

Etymology. The specific name, meaning “buffalo”, is a noun in apposition and is derived from the horns of the abdomen.

Janula triangularis new species

(Figs. 8–9, 40, 46–48)

Diagnosis. The present new species can be separated from other *Janula* species described here by its triangular abdomen with a broadly truncated posterior. It resembles *Janula modesta* (Thorell, 1898) described from Myanmar, but is distinguished from the latter by a black inverted “T” mark on a wider reddish brown abdomen (abdomen narrower, inverted “T” absent in *J. modesta*). Differences between the present new species and *J. bubalis* new species are given under the description of *J. bubalis*.

Description. Female (holotype). Carapace oval with two conical tubercles bearing the AMEs, and two round cervical grooves (Figs. 8–9, 40, 46). AMEs four-fifths and PMEs their diameter apart. AMEs larger than the others (5: 3). MOA, anterior width longer than posterior. Leg formula, 1, 4, 2, 3. First patella and tibia 2.2 times carapace length. Retrolateral hump at patella IV. Abdomen triangular, wider than long, with a pair of median sclerotized disks (Figs. 8–9, 46). Posterior edge broadly truncated with slight projections at lateral angles. Genital organ as shown in Figs. 47–48: epigynum with a square depression, sclerotized plates extend antero-laterally; seminal receptacles tumbler-like, surrounded by duct.

Coloration (Figs. 8–9, 40, 46). Carapace brown with slightly dusky along margin. Chelicerae and sternum dusky brown. Maxillae dusky brown, inner part grayish. Labium gray. Palpus brown. Legs brown: basal part of femora light brown; femora, patellae, tibiae and metatarsi with longitudinal dusky flecks. Abdomen reddish brown surrounded by broad black lateral margins and divided medially by a black inverted “T” marking; venter blackish brown; epigastric area brown.

Male. Unknown.

Measurements (in mm, ♀ holotype). Body length 3.71. Carapace length 1.22; width 1.22. Abdomen length 2.49;

width 3.32. Length of legs: I 8.58 (2.44 + 2.68 + 2.68 + 0.78); II 4.69 (1.37 + 1.32 + 1.41 + 0.59); III 2.94 (0.93 + 0.93 + 0.59 + 0.49); IV 6.11 (1.71 + 1.71 + 2.10 + 0.59). Diameters: AME 0.12; ALE 0.07; PME 0.07; PLE 0.07. Distances: AME-AME 0.10; AME-ALE 0.02; PME-PME 0.07; PME-PLE 0.06. MOA, anterior width 0.29; posterior width 0.20; length 0.22.

Variation. Measurements (in mm, 1♀ paratype and 1♀ from Bandar Seri Bagawan). Body length 3.51, 2.78. Carapace length 1.17, 1.22; width 1.07, 1.12. Abdomen length 2.44, 1.56; width 3.02, 2.00. Abdomen from Bandar Seri Bagawan small and dark brown, both sides of posterior angular round.

Type series. Holotype: ♀ (BM, JK.05.02.05.0025), Temburong, Lakiun Camp, Disturbed forest, Brunei, 04°42' 55"N 115°08'15"E, 25-V-2005, Joseph K H Koh leg. Paratype: 1♀ (NSMT-Ar 9178, JK.08.08.19.1008), Belait, Labi, Sungai Terawan, 04°23'01"N 114°28'45"E, 19-VIII-2008, Joseph K H Koh leg.

Other specimens. 1♀ (BM, JK.07.09.15.0011), Bandar Seri Bagawan, Jalan Kebangsaan, Simpang 335, ridge of disturbed forest, Brunei, 05°55'29"N 114°58'07"E, 15-IX-2007, Joseph K H Koh leg. Singapore: 1♀ (JK.05.06.23.0019), MacRitchie Reservoir, Teranteng Trail, regenerated forest, 1°21'25"N 103°48'59"E, 23-VI-2005, Joseph K H Koh leg., Specimen to be deposited at the Raffles Museum of Biodiversity Research, National University of Singapore.

Biology. This spider is found in the under-storey of secondary forests, sometimes on silk threads with a collection of termite carcasses, suggesting a special ability to capture them on the ground and haul them up to the spider's feeding site 1–2 meters above.

Distribution. Brunei Darussalam and Singapore.

Etymology. The specific name refers to the triangular abdomen.

***Janula batman* new species (Figs. 10–11, 49–50, 52–53)**

Diagnosis. The present new species is similar to *Janula parva* (Wunderlich, 2008) described from Malaysia in having an anterior median protuberance and two lateral outgrowths on the abdomen, but is distinguished from the latter by the more swollen shape of the abdomen with a more rounded posterior (squat abdomen with a more pointed posterior in *J. parva*). Unlike other species of studied *Janula* with lateral abdominal outgrowths, each of the outgrowths bears three short and stout spines. The abdomen is marked with numerous reddish ring-like patches (no such reddish annulated abdomen in the other species). *J. batman* is different from the other *Janula* in this paper by having a clearly defined reddish brown eye mark around the eyes.

Description. Female (holotype). Carapace oval, with two conical tubercles bearing the AMEs, and two round cervical grooves (Figs. 10, 49). AMEs their diameter apart and

PMEs two-thirds their diameter apart. AMEs and PMEs larger than ALEs and PLEs (3: 2). MOA, anterior width longer than posterior. Leg formula, 1, 4, 2, 3. First patella and tibia 2.8 times carapace length. Abdomen wider than long, with a small anterior median protuberance and two larger lateral humps; each lateral hump bearing three stout spines (Figs. 10–11, 50). Genital organ as shown in Figs. 52–53: epigynum with an indistinct depression; seminal receptacles tumbler-like, surrounded by duct.

Coloration (Figs. 10–11, 49–50). Carapace dusky brown, dark marginally; eye region clearly demarcated by reddish brown eye mark. Palpus, chelicerae, maxillae, labium and sternum dusky brown. Legs yellowish brown: coxae and trochanters dusky: femora with a basal and a one-fourth of distal dusky bands; patellae brown; tibiae with a distal wide band; metatarsi with basal and distal bands. Abdomen blackish brown with a few white spots and numerous pale patches surrounded by reddish rings; spines on lateral humps black.

Male. Unknown.

Measurements (in mm, ♀ holotype). Body length 1.93. Carapace length 0.63; width 0.34. Abdomen length 1.24; width 1.73. Length of legs: I 5.73 (1.63 + 1.78 + 1.71 + 0.61); II 3.51 (1.10 + 1.02 + 0.90 + 0.49); III 2.66 (0.83 + 0.76 + 0.68 + 0.39); IV 4.38 (1.41 + 1.27 + 1.24 + 0.46). Diameters: AME 0.07; ALE 0.05; PME 0.07; PLE 0.05. Distances: AME-AME 0.07; AME-ALE 0.02; PME-PME 0.05; PME-PLE 0.05. MOA, anterior width 0.20; posterior width 0.15; length 0.17.

Variation. Measurements (in mm, 1♀ paratype). Body length 1.59. Carapace length 0.61; width 0.61. Abdomen length 0.98; width 1.12.

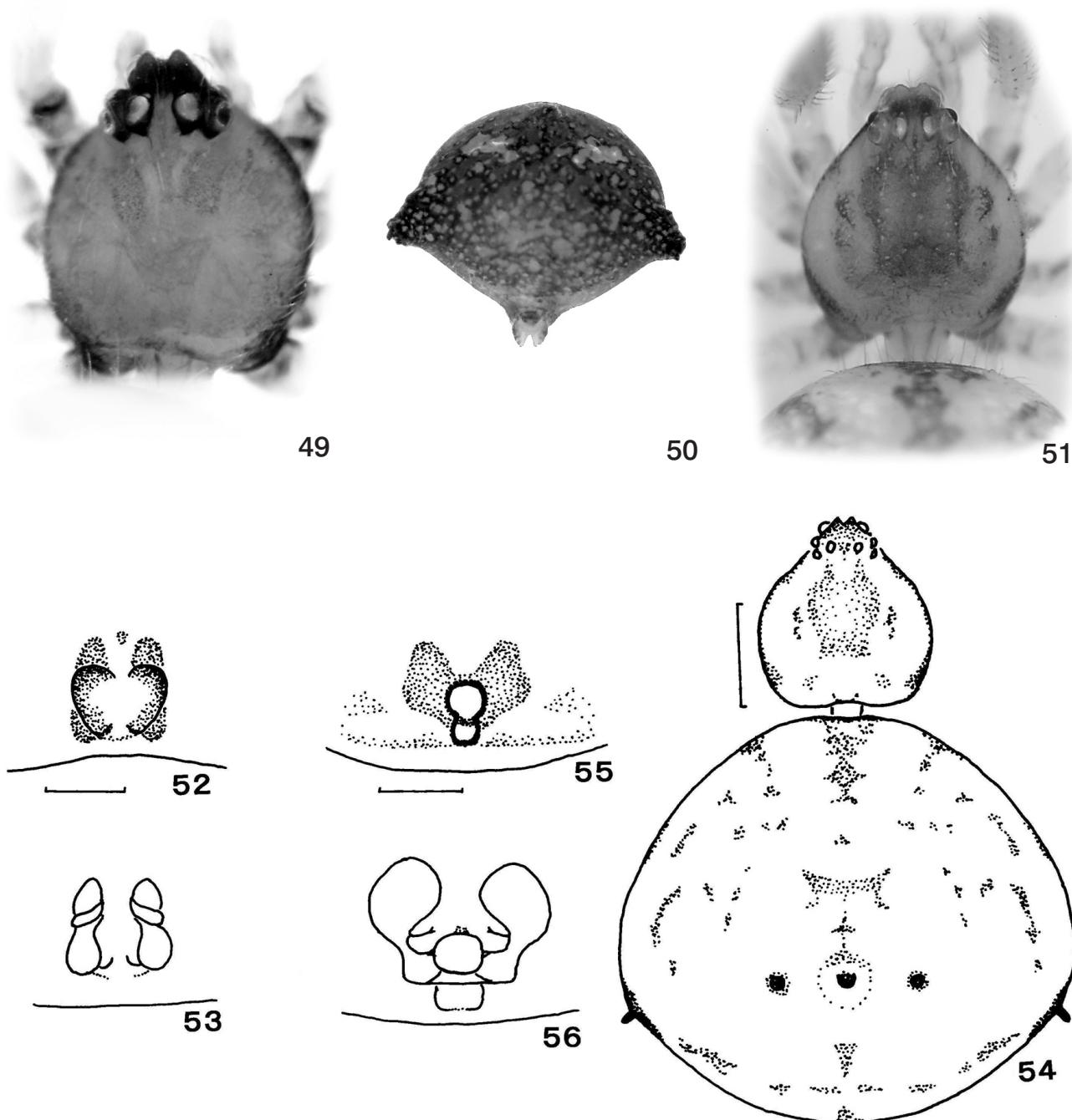
Type series. Holotype: ♀ (BM, JK.10.01.24.2012), Tutong, Tasek Merimbun, Site C2, Camp 2, Sg Melunchur, Brunei, 04°34'53"N 114°41'25"E, 24-I-2010, Joseph K H Koh leg. Paratype: 1♀ (BM, JK.07.07.17.0019), Tutong, Jalan Merimbun Kechil, 5 km from Tasek Merimbun Park HQ towards Kg Long Mayon, Mixed dipterocarp forest, 04°36'16"N 114°38'42"E, 7-VII-2007, Joseph K H Koh leg.

Distribution. Brunei Darussalam.

Etymology. The specific name is derived from the eye mark which resembles the mask worn by the comic hero "Batman".

***Janula triocellata* new species (Figs. 12–13, 51, 54–56)**

Diagnosis. The present new species is similar in general appearance to *Janula batman* new species described above, and to *Janula malachina* (Simon, 1895) described from Peru, especially in the shape of the abdomen. However, it is distinguished from them by having three brown sclerotized abdominal disks, a pair of short and stout abdominal spines, and by an abdomen yellowish dusky brown with white pigments and black flecks (without sclerotized disks in *J. malachina* and *J. batman*, without spines in *J.*



Figs. 49–56. *Janula batman* new species, ♀ holotype (49–50, 52–53) and *J. triocella* new species, ♀ holotype (51, 54–56) — 49, 51, carapace, dorsal view; 50, abdomen, dorsal view; 52, 55, epigynum, ventral view; 53, 56, internal genitalia, dorsal view; 54, carapace and abdomen, dorsal view. Scales: 0.1 mm (52–53, 55–56) and 0.5 mm (54). [Photo: Joseph K H Koh]

malachina).

Description. Female (holotype). Carapace oval with two conical tubercles bearing the AMEs at their basal halves (Figs. 13, 51, 54). AMEs their diameter apart. PMEs four-sevenths their diameter apart. Diameters in ratio, AME: ALE: PME: PLE = 8: 4: 7: 7. MOA, anterior width longer than posterior. Leg formula, 1, 4, 2, 3. First patella and tibia 2.1 times carapace length. Abdomen sub-triangular,

wider than long, with a single median and paired lateral sclerotized disks; lateral angles with a pair of short spine-like projections (Figs. 12–13, 54). Genital organ as shown in Figs. 55–56: epigynum with an 8-shaped depression; seminal receptacles oval; duct short.

Coloration (Figs. 12–13, 51, 54). Carapace yellowish brown with a distinct wide median reddish zone and a narrow reddish margin. Chelicerae, maxillae, and labium

dusky brown. Sternum blackish brown. Palpus yellowish brown with dusky flecks. Legs yellowish brown: coxae, trochanters and basal part of third femora with reddish flecks; fourth femora with wide distal bands. Abdomen yellowish dusky brown with white pigments and black flecks; sclerotized disks brown; spine-like projections and their base black; venter almost dusky; spinnerets surrounded with reddish ring.

Male. Unknown.

Measurements (in mm, ♀ holotype). Body length 2.68. Carapace length 0.78; width 0.78. Abdomen length 1.76; width 2.05. Length of legs: I 4.88 (1.41 + 1.66 + 1.22 + 0.59); II 2.93 (0.83 + 0.98 + 0.68 + 0.44); III 2.09 (0.63 + 0.63 + 0.44 + 0.39); IV 3.61 (1.12 + 1.17 + 0.88 + 0.44). Diameters: AME 0.10; ALE 0.05; PME 0.09; PLE 0.09. Distances: AME-AME 0.10; AME-ALE 0.02; PME-PME 0.05; PME-PLE 0.04. MOA, anterior width 0.22; posterior width 0.17; length 0.17.

Type specimen. Holotype: ♀ (BM, JK.08.11.02.0003), Tutong, Tasek Merimbun, disturbed forest near Park HQ, Brunei, 04°35'40"N 114°40'26"E, 2-XI-2008, Joseph K H Koh leg.

Distribution. Brunei Darussalam.

Etymology. The specific name alludes to the three abdominal sclerotized disks.

Brunepisinus new genus

Diagnosis. The new genus resembles *Episinus* Latreille, 1809 and *Janula* Strand, 1932, but is distinguished from them by the following characteristics (those of *Episinus* and *Janula* in parenthesis): 1) AMEs on a rounded and raised tubercle projecting anteriorly from the carapace (without such round and raised tubercle in *Episinus*; with two conical tubercles in *Janula*); 2) male first coxae with retrolatero-distal hump and second femora with prolatero-basal one; they are stridulating organ (without humps); 3) leg formula, 4, 1, 2, 3 (1, 4, 2, 3); 4) abdomen long, nearly cylindrical or wedge-shaped (usually broadly triangular); 5) abdomen with small nipple-like projections (without projections in the more typical *Episinus*, including the type *E. truncatus* Latreille 1809); and 6) tegulum of male palpus with membranous projection (without membranous projection). *Brunepisinus* are generally larger (6–7 mm in length in both ♂ and ♀) than the typical *Episinus* (3–5 mm) and *Janula* (2.5–3.7 mm in ♀, 1.7–2.5 mm in ♂).

Description. Carapace with an anterior rounded and raised tubercle bearing AMEs. Leg formula, 4, 1, 2, 3. First patella and tibia 1.5–1.8 times carapace length. Male first coxae with retrolatero-distal hump and second femora with prolatero-basal one; they are stridulating organ. Abdomen with paired dorsal nipple-like projections; oblong and slender (but wedge-shaped when well fed or gravid), length more than twice the width. Epigynum with two depressions. Male palpus with embolus thin, long and clockwise (left); tegulum with a membranous projection, forming as an

embolus guide; paracymbium hooked.

Type species. *Brunepisinus selirong* new species.

Etymology. The generic name is a contraction of Brunei and *Episinus*, and is masculine in gender.

Brunepisinus selirong new species

(Figs. 14–19, 57–69)

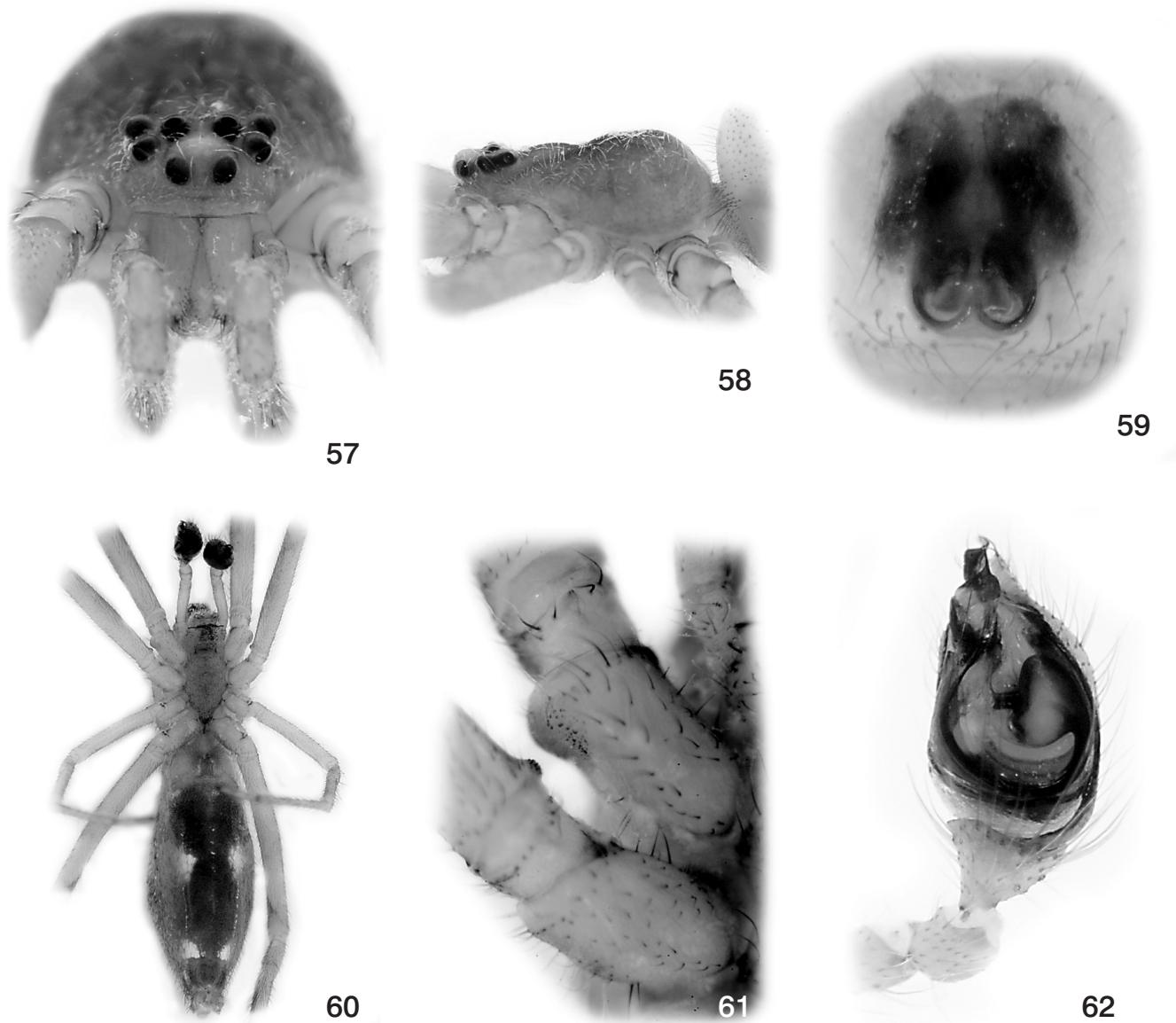
Diagnosis. This species is only a member of this genus and is easily distinguished from the other species described under the related genera, *Episinus* and *Janula*, by its larger size and the generic characters as described above.

Description. Female (holotype). Carapace hirsute and oblong, broadly truncated posteriorly; ocular region slightly elevated with a round tubercle bearing the AMEs projecting anteriorly; cervical grooves median short and posterior V-shape (Figs. 14, 57–58, 63). Posterior eyes strongly recurved. ALEs and PLEs their diameter apart. Diameters in ratio, AME: ALE: PME: PLE = 6: 4: 5: 5. MOA slightly longer than wide. Chelicerae with a basal large tooth and a distal small one on anterior margin of fang furrow. Leg formula, 4, 1, 2, 3. First patella and tibia 1.5 times carapace length. Abdomen oblong with two pairs of small nipple-like projections (Figs. 14, 63). Genital organ as shown in Figs. 59, 65–66: epigynum with two depressions; two openings at outer sides of depressions; ducts short, forming a semicircle; seminal receptacles large and tumbler-like.

Coloration (Figs. 14–15, 63). Carapace brown, ALE, PME and PLE surrounded with black base. Chelicerae, maxillae, labium, sternum, palpus and legs brown. Abdomen grayish brown with posteriorly dusky flecks; paired nipple-like projections black; sclerotized disks brown. Venter black with two pairs of white patches.

Male (allotype). Abdomen cylindrical, thinner than that of female (Figs. 16, 60, 64). AMEs a half their diameter apart. Diameters in ratio, AME: ALE: PME: PLE = 16: 8: 11: 11. First patella and tibia 1.8 times carapace length. First coxae with retrolatero-distal hump and second femora with prolatero-basal one; they are apparently parts of a stridulating organ (Figs. 60–61). Palpal organ as shown in Figs. 62, 67–69: embolus thin, long and clockwise (left) with large base; conductor large and projecting anteriorly; tegulum with a membranous projection, forming an embolus guide; paracymbium hooked. Other characteristics as in female.

Measurements (in mm, ♀ holotype/ ♂ allotype). Body length 6.49/ 5.56. Carapace length 2.10/ 2.00; width 1.76/ 1.51. Abdomen length 4.39/ 3.56; width 2.05/ 1.22. Length of legs: I 9.99/ 11.16 (3.02/ 3.17 + 3.17/ 3.56 + 3.12/ 3.56 + 0.68/ 0.63); II 6.78/ 6.78 (2.00/ 2.10 + 2.20/ 2.10 + 1.95/ 1.95 + 0.63/ 0.63); III 4.73/ 4.44 (1.41/ 1.22 + 1.41/ 1.41 + 1.32/ 1.22 + 0.59/ 0.59); IV 10.63/ 13.31 (3.12/ 2.78 + 3.12/ 3.02 + 3.41/ 3.61 + 0.98/ 0.88). Diameters: AME 0.15/ 0.20; ALE 0.12/ 0.12; PME 0.10/ 0.10; PLE 0.12/ 0.12. Distances: AME-AME 0.12/ 0.10; AME-ALE 0.07/ 0.02; PME-PME 0.20/ 0.17; PME-PLE 0.20/ 0.10;



Figs. 57–62. *Burunepisinus selirong* new species, ♀ holotype (57–59) and ♂ allotype (60–62) — 57, anterior view; 58, cephalothorax, lateral view; 59 epigynum, ventral view; 60, ventral view; 61, first and second legs, ventral view; 62, palpus, ventral view. [Photo: Joseph K H Koh]

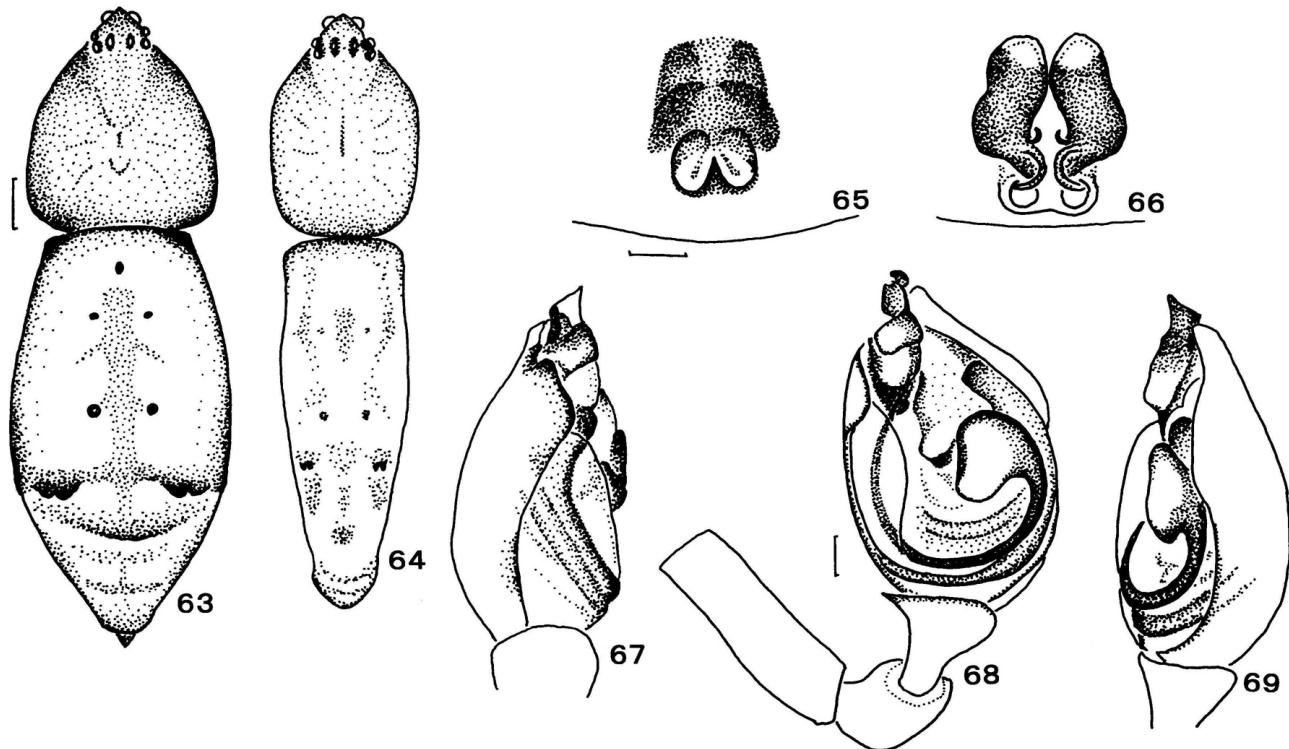
ALE-PLE 0.12/ 0.15. MOA, anterior width 0.39/ 0.39; posterior width 0.39/ 0.34; length 0.41/ 0.37.

Variation. Measurements (in mm, 1♀ paratype, 1♀ from Ashton Trail/ 1♂ paratype). Body length 7.22, 9.66/ 6.54. Carapace length 2.24, 2.83/ 2.15; width 1.76, 2.24/ 1.56. Abdomen length 4.48, 6.83/ 4.39; width 2.02, 3.32/ 1.76. Abdomen with a large posterior yellow patch in Ashton Trail and Belait specimens (Figs. 17–19).

Type series. Holotype: ♀, 2-IX-2006 (BM, JK.06.09.02.1006), 04°53'22"N 115°07'04"E, Temburong, Pulau Selirong, mangrove swamp (fern thicket), Brunei, and allotype: ♂, 11-XII-2007 (BM, JK.07.12.11.0029), 04°52'

34"N 115°08'13"E, same locality as for the holotype, Joseph K H Koh leg. Paratypes: 1♀ and 1♂, same data as for the holotype (NSMT-Ar 9179-9180, JK.06.09.02.0012, 0025).

Other specimens. 1♀ (BM, JK.10.05.30.0006), 1♂ subadult (BM, JK.10.05.30.0007), Temburong Nat Park, Kuala Belalong, Ashton Trail, Brunei, 04°32'38"N 115°09' 00"E, 307 m alt ASL, 1° forest, 30-V-2010, Joseph K H Koh leg.; 1♀ (BM, JK.09.02.28.0010), Belait, Labi, Wasai Beluluk waterfall, 04°16'46"N 114°25'25"E, 67 m alt, 28-II-2009, Joseph K H Koh leg.; 1♀ (NSMT-Ar 9181, JK.06.07.06), Belait, Kampong Sukang, 04°18'36"N 114° 37'39"E, 67 m alt, Secondary forest foliage, 6-VII-2006,



Figs. 63–69. *Burunepisinus selirong* new species, ♀ holotype (63, 65–66) and ♂ allotype (64, 67–69) — 63–64, carapace and abdomen, dorsal view; 65, epigynum, ventral view; 66, internal genitalia, dorsal view; 67–69, palpus, prolateral (67), ventral (68) and retralateral (69) views. Scales: 0.5 mm (63–64) and 0.1 mm (65–69).

Joseph K H Koh leg.

Biology. The spider is seasonally common in mangrove swamps, among fern thickets, and among foliage in both primary and secondary forests. It has a habit of remaining stationery, lying flat against the surface with legs I and II stretched forward.

Distribution. Brunei Darussalam.

Etymology. The specific name is a noun in apposition derived from the type locality.

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